

Pressure transmitter For sanitary applications Model SA-11

WIKA data sheet PE 81.80



for further approvals
see page 13

Applications

- For gases, compressed air, vapour; liquid, pasty, powdery and crystallising media
- Ultra-pure steam systems for SIP
- Hydrostatic level measurement
- Vacuum monitoring, e.g. vacuum conveyors, pump monitoring
- Food and beverage industry, pharmaceutical industry, biotechnology, sanitary applications

Special features

- Wide variety of aseptic process connections, for process temperatures up to 150 °C [302 °F]
- Diaphragm seal parts all welded
- Suitable for SIP and CIP
- Ingress protection up to IP68



Pressure transmitter model SA-11 with
TRI-CLAMP® connection

Description

The model SA-11 pressure transmitter is designed especially for the requirements of the food and beverage, pharmaceutical and biotechnology industries.

The instrument is particularly suitable for the special conditions of CIP/SIP cleaning processes, such as chemical stability towards cleaning liquids and high temperatures.

The flush diaphragm is directly welded to the process connection. This guarantees a crevice-free joint between the process connection and the measuring cell, additional sealings are not required.

For dead-space free instrumentation, aseptic process connections (clamp, threaded, VARINLINE® and NEUMO®) are available.

The model SA-11 conforms to the 3-A Sanitary Standard and is EHEDG-certified.

Construction

A diaphragm made of 1.4435 stainless steel forms a flush separation of the process medium from the pressure transmitter.

The process pressure is transmitted hydrostatically from the diaphragm, via an FDA-approved system fill fluid, to a piezoresistive sensor.

The measuring range covers 0 ... 250 mbar up to 0 ... 25 bar. The model SA-11 pressure transmitter is powered with a DC voltage of 10 (14) ... 30 V. As output signals, 4 ... 20 mA, 0 ... 20 mA or 0 ... 10 V are available.

A stainless steel case, with an ingress protection of up to IP68, offers a secure protection for external cleaning with splash water and enables its use in high-humidity environments. Through the integrated cooling element, process temperatures of up to 150 °C [302 °F] can be realised.

Specifications

Versions



Installation example

Pressure transmitter model SA-11, with circular connector M12 x 1 and grooved union nut DIN 11864-1



The total height of the model SA-11 pressure transmitter includes the electrical connection, the transmitter case and the process connection

Accuracy specifications		
Non-linearity per BFSL (per IEC 61298-2)	≤ 0.2 % of span	
Accuracy ¹⁾	<ul style="list-style-type: none"> ■ ≤ 0.5 % of span ■ ≤ 0.25 % of span 	
Mean temperature coefficients at 0 ... 80 °C [32 ... 176 °F]		
Zero point	Measuring range 0 ... 0.6 bar to 0 ... 25 bar	≤ 0.2 % of span / 10 K
	Measuring range 0... 0.4 bar	≤ 0.25 % of span / 10 K
	Measuring range 0.... 0.25 bar	≤ 0.4 % of span / 10 K
Span	≤ 0.2 % of span / 10 K	
Long-term stability (per DIN 16086)	≤ 0.2 % of span/year	
Adjustability of zero point, span	Adjustment is made using potentiometers inside the instrument. Not possible for IP68 cable outlet.	
Non-repeatability (per IEC 61298-2)	≤ 0.1 % of span	
Mounting position influence	Calibrated in vertical mounting position with process connection facing downwards.	

1) Including non-linearity, hysteresis, zero offset and end value deviation (corresponds to measured error per IEC 61298-2), calibrated in vertical mounting position with process connection facing downwards.

Gauge pressure, measuring ranges

Measuring range	
bar	psi
0 ... 0.25	0 ... 5
0 ... 0.4	0 ... 10
0 ... 0.6	0 ... 15
0 ... 1	0 ... 30
0 ... 1.6	0 ... 60
0 ... 2.5	0 ... 100
0 ... 4	0 ... 160
0 ... 6	0 ... 200
0 ... 10	0 ... 300
0 ... 16	
0 ... 25	

Absolute pressure, measuring ranges

Measuring range	
bar abs.	psi abs.
0 ... 1	0 ... 15
0 ... 1.6	0 ... 25
0 ... 2.5	0 ... 50
0 ... 4	0 ... 100
0 ... 6	0 ... 250
0 ... 10	
0 ... 16	

Vacuum and +/- measuring ranges

Measuring range	
bar	psi
-1 ... 0	-30 inHg ... 0
-1 ... +0.6	-30 inHg ... +30
-1 ... +1	
-1 ... +2	
-1 ... +3	
-1 ... +4	
-1 ... +5	
-1 ... +9	
-1 ... +10	
-1 ... +15	

Other measuring ranges on request.

Further details on: Measuring ranges	
Special measuring ranges	Other measuring ranges on request
Unit	<ul style="list-style-type: none"> ■ bar ■ psi ■ bar abs. ■ psi abs.
Overpressure limit	
Measuring ranges ≤ 6 bar	4 times
Measuring ranges 10 bar and 16 bar	3 times
Measuring range 25 bar	2 times
Vacuum resistance	Vacuum-resistant to -1 bar

Process connection	
Standard	Size
TRI-CLAMP® (DIN 32676) For pipes per DIN 11866 row C or ASME BPE	<ul style="list-style-type: none"> ■ DN 1 ½" ■ DN 2"
DIN 32676 For pipes per DIN 11866 row A or DIN 11850 row 2	<ul style="list-style-type: none"> ■ DN 32 ■ DN 40 ■ DN 50
ISO 2852 For pipes per ISO 2037 and BS 4825 part 1	<ul style="list-style-type: none"> ■ DN 38 ■ DN 40 ■ DN 51
DIN 11851 For pipes per DIN 11850 row 2	<ul style="list-style-type: none"> ■ DN 25 ■ DN 40 ■ DN 50
SMS (SMS 1145) For pipes per ISO 1127 row 2 or ISO 2037/1992	<ul style="list-style-type: none"> ■ DN 1 ½" ■ DN 2"
IDF (ISO/DIS 2853 and BS 4825 part 4) For pipes per ISO 1127 row 2 or ISO 2037/1992	<ul style="list-style-type: none"> ■ DN 1 ½" ■ DN 2"
APV-RJT (BS 4825 part 5) For pipes per BS 4825 part 1 and O.D. tube	<ul style="list-style-type: none"> ■ DN 1 ½" ■ DN 2"
VARINLINE® Suitable for installation in VARINLINE® components	<ul style="list-style-type: none"> ■ Form F, PN 25 ■ Form N, PN 25
DIN 11864-1 form A For pipes per DIN 11866 row A or DIN 11850 row 2	<ul style="list-style-type: none"> ■ DN 40 ■ DN 50
DIN 11864-2 form A For pipes per DIN 11866 row A or DIN 11850 row 2	<ul style="list-style-type: none"> ■ DN 40 ■ DN 50
DIN 11864-3 form A For pipes per DIN 11866 row A or DIN 11850 row 2	<ul style="list-style-type: none"> ■ DN 40 ■ DN 50
NEUMO BioControl® Suitable for installation in BioControl® cases, see data sheet AC 09.14	<ul style="list-style-type: none"> ■ Size 50 ■ Size 65
NEUMO BioConnect® Flange, form V	<ul style="list-style-type: none"> ■ DN 40 ■ DN 50
NEUMO BioConnect® Liner and grooved union nut, form V	<ul style="list-style-type: none"> ■ DN 40 ■ DN 50
DRD flange connection	-

Output signal		
Signal type	<ul style="list-style-type: none"> ■ 4 ... 20 mA, 2-wire ■ 0 ... 20 mA, 3-wire ■ DC 0 ... 10 V, 3-wire ■ DC 0 ... 5 V, 3-wire 	
	Other output signals, e.g. CANopen, on request	
Load in Ω		
4 ... 20 mA, 2-wire	$R_A \leq (U_+ - 10 \text{ V}) / 0.02 \text{ A}$	
0 ... 20 mA, 3-wire	$R_A \leq (U_+ - 3 \text{ V}) / 0.02 \text{ A}$	
DC 0 ... 10 V, 3-wire	$R_A > 10 \text{ k}$	
DC 0 ... 5 V, 3-wire	$R_A > 10 \text{ k}$	
Voltage supply		
Supply voltage	Signal type 4 ... 20 mA, 2-wire	DC 10 ... 30 V
	Signal type 0 ... 20 mA, 3-wire	DC 10 ... 30 V
	Signal type DC 0 ... 10 V, 3-wire	DC 14 ... 30 V
	Signal type DC 0 ... 5 V, 3-wire	DC 10 ... 30 V
Overvoltage protection / dielectric strength ¹⁾	DC 36 V	
Time response		
Response time (10 ... 90 %)	$\leq 10 \text{ ms}$	

1) NEC class 02 voltage supply (low voltage and low current max. 100 VA even under fault conditions)


Electrical connection	Ingress protection ¹⁾	Wire cross-section	Cable diameter	Cable length
Angular connector DIN 175301-803 A	IP65	Max. 1.5 mm ²	6 ... 8 mm	-
Field case	IP67	-	-	-
Circular connector M12 x 1 (4-pin)	IP67	-	-	-
Cable outlet, 1.5 m	IP68	Max. 0.5 mm ²	6 ... 8 mm	1.5 m


1) The stated ingress protection only applies when plugged in using mating connectors that have the appropriate ingress protection.


Other electrical connections on request


Further details on: Electrical connection	
Short-circuit resistance	S+ vs. U-
Reverse polarity protection	U+ vs. U-
Insulation voltage	DC 500 V with NEC class 02 voltage supply (low voltage and low current max. 100 VA even under fault conditions)

Pin assignment

Angular connector DIN 175301-803 A			
		2-wire	3-wire
	U+	1	1
	U-	2	2
	S+	-	3

Field case			
		2-wire	3-wire
	U+	1	1
	U-	2	2
	S+	3	3

Circular connector M12 x 1 (4-pin)			
		2-wire	3-wire
	U+	1	1
	U-	3	3
	S+	-	4

Cable outlet			
		2-wire	3-wire
	U+	Brown (BN)	Brown (BN)
	U-	Green (GN)	Green (GN)
	S+	-	White (WH)

Materials	
Wetted parts	Stainless steel 1.4435
Material (wetted)	Stainless steel 1.4571
System fill fluid	<ul style="list-style-type: none"> ■ Synthetic oil, KN 77, FDA-compliant, FDA-CFR no. 21CFR178.3750 ■ Neobee® M-20, KN 59, FDA-compliant, FDA-CFR no. 21CFR174.5

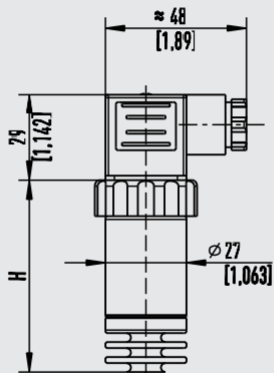
Operating conditions	
Temperature ranges ¹⁾	
Medium temperature	-20 ... +150 °C [-4 ... +302 °F]
Ambient temperature	-20 ... +80 °C [-4 ... +176 °F]
Storage temperature	-40 ... +100 °C [-40 ... +212 °F]
Vibration resistance (per IEC 60068-2-6)	15 g
Shock resistance (per IEC 60068-2-27)	500 g

1) Also meets EN 50178, tab. 7, operation (C) 4K4H, storage (D) 1K4, transport (E) 2K3

Dimensions in mm [in]

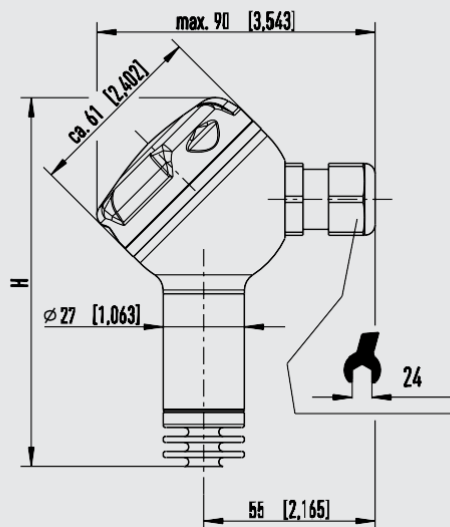
Angular connector DIN 175301-803 A

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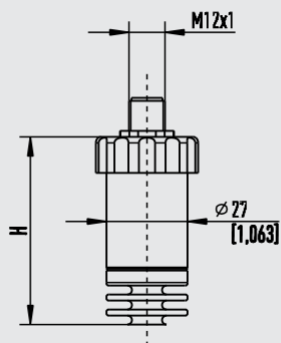
Field case

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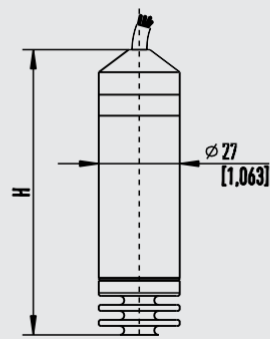
Circular connector M12 x 1

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Cable outlet

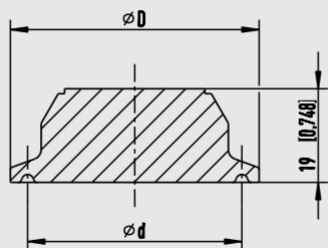
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Version	H	
	With accuracy 0.5 %	With accuracy 0.25 %
Angular connector	64 [2.52]	84 [3.31]
Field case	123 [4.84]	138.5 [5.45]
M12 x 1	64 [2.52]	84 [3.31]
Cable outlet	79.5 [3.13]	95 [3.74]

Process connections

Clamp connection (clamp)



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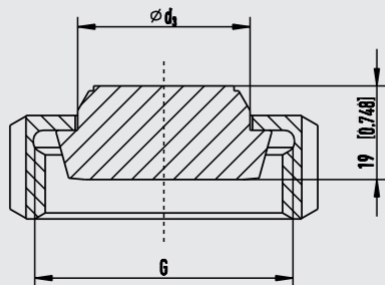


EHEDG-compliant only in combination with a Kalrez stainless steel gasket from Dupont de Nemours or with a T-ring seal from Combifit International B.V.

Standard	Size	Dimensions in mm [in]	
		D	d
TRI-CLAMP® 1) (DIN 32676) For pipes per DIN 11866 row C or ASME BPE	1 ½"	50.5	43.5
	2"	64	56.6
DIN 32676 For pipes per DIN 11866 row A or DIN 11850 row 2	DN 32	50.5	43.5
	DN 40	50.5	43.5
	DN 50	64	56.6
ISO 2852 For pipes per ISO 2037 and BS 4825 part 1	DN 33.7	50.5	43.5
	DN 38	50.5	43.5
	DN 40	64	56.6
	DN 51	64	56.6

1) TRI-CLAMP® is a trademark of the company Alfa Laval AB SE

Grooved union nut DIN 11851



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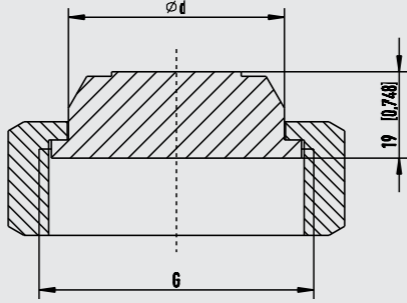


3-A-compliant only in combination with profile sealing from SKS Komponenten BV or Kieselmann GmbH.

EHEDG-compliant only in combination with ASEPTO-STAR k-flex upgrade sealing from Kieselmann GmbH

Standard	Size	Dimensions in mm [in]	
		G	d ₃
DIN 11851 For pipes per DIN 11850 row 2	DN 25	Rd 52 x 1/6	44
	DN 40	Rd 65 x 1/6	48
	DN 50	Rd 78 x 1/6	61

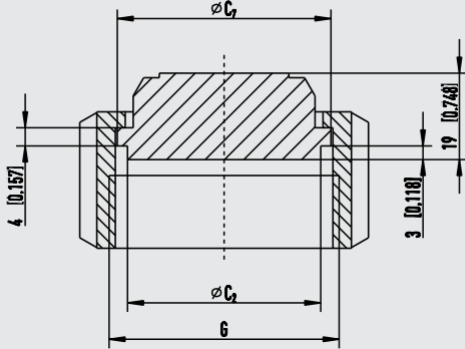
Grooved union nut SMS



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Standard	Size	Dimensions in mm [in]	
		G	d ₃
SMS (SMS 1145) For pipes per ISO 1127 row 2 or ISO 2037/1992	1 1/2"	Rd 60 x 1/6	47.5
	2"	Rd 70 x 1/6	60

Grooved union nut IDF

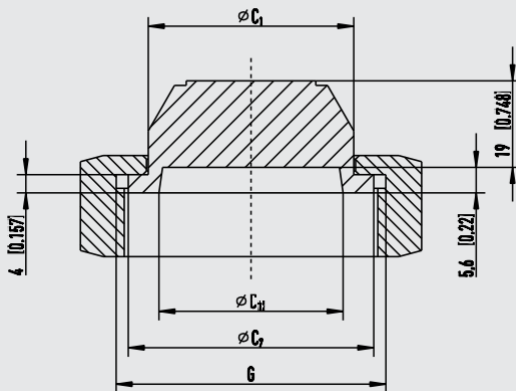


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3-A-compliant only in combination with a sealing with support ring per ISO 2853

Standard	Size	Dimensions in mm [in]		
		G	C ₂	C ₇
IDF (ISO/DIS 2853 and BS 4825 part 4) For pipes per ISO 1127 row 2 or ISO 2037/1992	1 1/2"	IDF 1.5	42.5	47
	2"	IDF 2	56	60.5

Grooved union nut APV-RJT

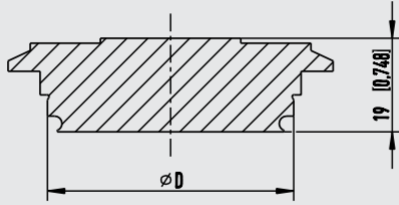


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Standard	Size	Dimensions in mm [in]			
		G	C ₁	C ₇	C ₁₂
APV-RJT (BS 4825 part 5) For pipes per BS 4825 part 1 and O.D. tube	1 1/2"	2 5/16" x 8	45.2	54	40.5
	2"	2 7/8" x 8	57.7	66.6	53.2

VARINLINE®

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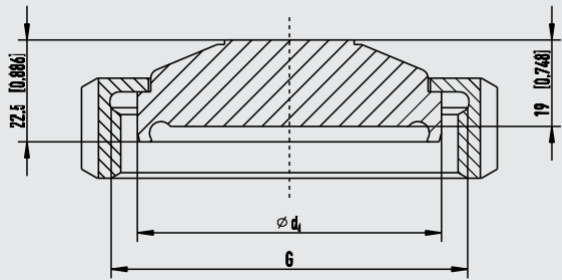
Size	Dimensions in mm [in]
	D
VARINLINE® form F, PN 25	50
VARINLINE® form N, PN 25	68

Suitable VARINLINE® component	EHEDG-compliant	
	Form F	Form N
Case	No	Yes
Type T case connecting flange	Yes	Yes
Type T-S case connecting flange	No	No
Type U case connecting flange	No	No
Type U-S case connecting flange	No	No
Type P tank connection flange	Yes	Yes

EHEDG-compliant only in combination with an EPDM O-ring

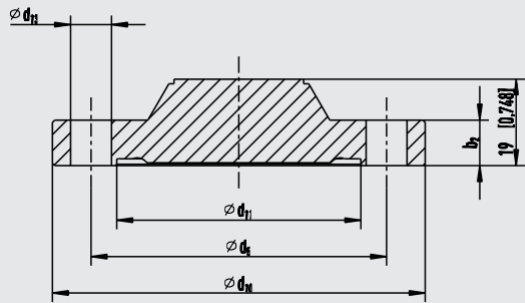
Grooved union nut DIN 11864-1

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Standard	Size	Dimensions in mm [in]	
		G	d ₆
DIN 11864-1 form A For pipes per DIN 11866 row A or DIN 11850 row 2	DN 40	Rd 65 x 1/6	54.9
	DN 50	Rd 78 x 1/6	66.9

Flange connection DIN 11864-2

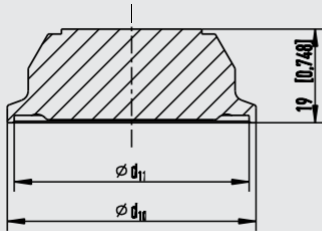


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Standard	Size	Dimensions in mm [in]				
		d_5	d_{10}	d_{11}	d_{13}	b_2
DIN 11864-2 form A For pipes per DIN 11866 row A or DIN 11850 row 2	DN 40	65	82	53.7	4 x 9	10
	DN 50	77	94	65.7	4 x 9	10

Clamp connection (clamp) DIN 11864-3

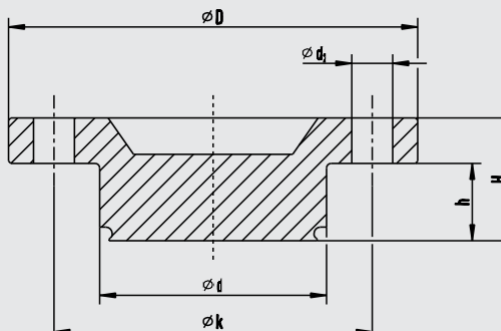


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Standard	Size	Dimensions in mm [in]	
		d_{10}	d_{11}
DIN 11864-3 form A For pipes per DIN 11866 row A or DIN 11850 row 2	DN 40	64	53.7
	DN 50	77.5	65.7

NEUMO BioControl®

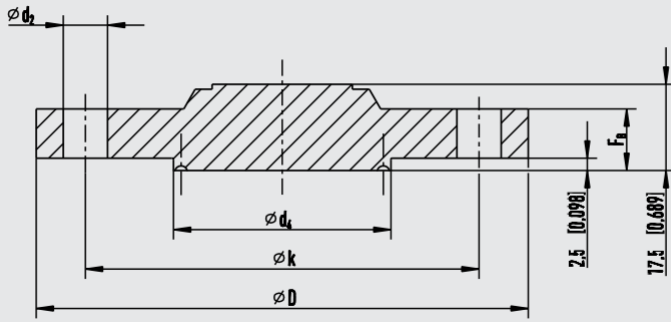


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Standard	Size	Dimensions in mm [in]					
		d	d_2	D	k	h	H
NEUMO BioControl® Suitable for installation in NEUMO BioControl® case, see data sheet AC 09.14	Size 50	50	4x9	90	70	17	27
	Size 65	68	4x11	120	95	17	27

NEUMO BioConnect®

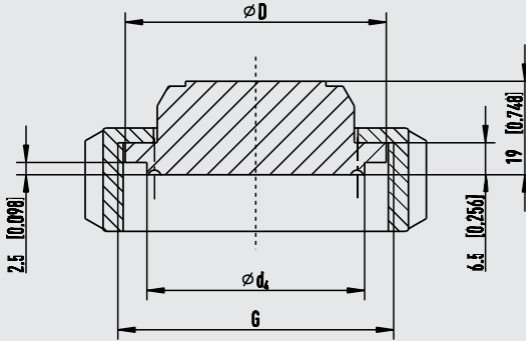


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Standard	Size	Dimensions in mm [in]				
		d ₂	d ₄	D	k	F _B
NEUMO BioConnect® Flange, form V	DN 40	4 x 9	44.2	100	80	10
	DN 50	4 x 9	56.2	110	90	12

NEUMO BioConnect®

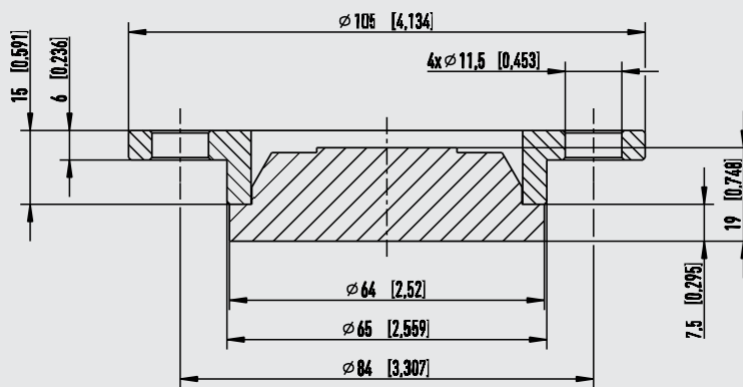


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Standard	Size	Dimensions in mm [in]		
		G	d ₄	D
NEUMO BioConnect® Liner and grooved union nut, form V	DN 40	M56 x 2	44.2	53
	DN 50	M68 x 2	56.2	65

DRD flange connection



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3-A-compliant in self-draining mounting position, see data sheet DS 99.39, bottom of page 2

Other process connections on request

Approvals







Approvals included in the scope of delivery

Logo	Description	Country
	EU declaration of conformity	European Union
	EMC directive EN 61326 emission (group 1, class B) and immunity (industrial application)	
	RoHS directive	
	CSA Safety (e.g. electr. safety, overpressure, ...)	Canada
	3-A ¹⁾ Sanitary Standard This instrument is 3-A marked, based on a third party verification for conformance to the 3-A standard.	USA
	EHEDG ²⁾ Hygienic Equipment Design	European Union
-	CRN Safety (e.g. electr. safety, overpressure, ...)	Canada

1) 3-A conformity only in connection with the marked process connections marked

2) EHEDG conformity only in connection with the marked process connections

Optional approvals

Logo	Description	Country
	EAC EMC directive	Eurasian Economic Community
	GOST Metrology, measurement technology	Russia
	KazInMetr Metrology, measurement technology	Kazakhstan
-	MTSCHS Permission for commissioning	Kazakhstan
	BelGIM Metrology, measurement technology	Belarus
	UkrSEPRO Metrology, measurement technology	Ukraine
	Uzstandard Metrology, measurement technology	Uzbekistan

Manufacturer's information and certificates

Logo	Description
-	Manufacturer's statement GB 4806.1-2016 National Food Safety Standard / Good Manufacturing Practice (GMP) GB 31603-2015
-	Manufacturer's declaration regarding EU regulation 1935/2004 EC
-	China RoHS directive




Certificates (option)

Certificates	
Certificates	<ul style="list-style-type: none"> ■ 2.2 test report per EN 10204 <ul style="list-style-type: none"> - State-of-the-art manufacturing, material proof, indication accuracy - FDA conformity of the system fill fluid - 3-A conformity of the diaphragm seal, based on a third party verification ■ 3.1 inspection certificate per EN 10204 <ul style="list-style-type: none"> - Material proof, wetted metal parts - Indication accuracy ■ Others on request

→ Approvals and certificates, see website

Accessories

Instruments for on-site calibration

Model		Description
	CPG-KITP	<p>Pneumatic service kit, accuracy 0.1 % FS (0.05 % FS or 0.025 % FS also available)</p> <ul style="list-style-type: none">■ Model CPG1500 precision digital pressure gauge■ Model CPP30 pneumatic hand test pump, pressure generation -0.95 ... +35 bar■ Adapter set■ Service case <p>→ see data sheet CT 93.01</p>
	CPH7000	<p>Portable process calibrator, accuracy 0.025 % FS</p> <ul style="list-style-type: none">■ Model CPH7000 process calibrator, integrated manual pressure generation -0.85 ... +25 bar■ Power supply unit■ Service case <p>→ see data sheet CT 15.51</p>
	CPH7650	<p>Portable pressure calibrator, accuracy 0.025 % FS</p> <ul style="list-style-type: none">■ Model CPH7650 pressure calibrator, integrated electrical pressure generation -0.85 ... +20 bar■ Test cables■ Battery charger <p>→ see data sheet CT 17.02</p>